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/* GOPIKRISHNA V
      S3 CSE A
      52
*/

//Program with menu driven sorting

#include<stdio.h>
#include<stdlib.h>
#include<string.h>

void linear();
void binary();

void main()
{
      int sel;
      start:
      printf("\n1.Linear Search\n2.Binary Search\n3.Exit\n");
      printf("Select the type of sorting [1/2/3]\n");
      scanf("%d",&sel);
      switch(sel)
            {
                  case 1:linear();
                  break;
                  case 2:binary();
                  break;
                  case 3:exit(0);
                  break;
                  default:printf("Wrong Input\n");
            }
      goto start;
}

void linear()
{
      int key,arr[50],i,limit;
      printf("Enter the limit = ");
      scanf("%d",&limit);
      printf("Enter the elements\n");
      for(i=0;i<limit;i++)
            scanf("%d",&arr[i]);
      printf("Enter the element to be searched = ");
      scanf("%d",&key);

      for(i=0;i<limit;i++)
      {
            if(arr[i]==key)
            {
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                printf("The element found at %d\n\n\n",i+1);
            }
        }
}
void binary()
{
        int key,arr[50],i,limit;
        printf("Enter the limit = ");
        scanf("%d",&limit);
        printf("Enter the elements\n");
        for(i=0;i<limit;i++)
            scanf("%d",&arr[i]);
        printf("Enter the element to be searched = ");
        scanf("%d",&key);

        for (int c=0;c<limit-1;c++)
        {
            for(int d=0;d<limit-c-1;d++)
            {
                if(arr[d]>arr[d+1])
                {
                    int temp=arr[d];
                    arr[d]=arr[d+1];
                    arr[d+1]=temp;
                }
            }
        }

        printf("The sorted array [Ascending]\n");

        for(int k=0;k<limit;k++)
        {
            printf(" %d \t",arr[k]);
        }

        int low,mid,high;
        low=0;
        high=limit-1;
        mid=(low+high)/2;

        int flag=0;
        while(flag==0)
        {
            if(arr[mid]==key)
            {
                printf("\nThe element found at %d\n\n\n",mid+1);
                flag=1;
            }
            if(key>arr[mid])
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            {
                  low=mid+1;
                  high=limit-1;
                  mid=(low+high)/2;
            }
            if(key<arr[mid])
            {
                  low=0;
                  high=mid-1;
                  mid=(low+high)/2;
            }
      }
}
```